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"Our Water, Our Future"
Forum on Cutting-Edge Technologies for Water Services: Applications in Africa
U.S. State Department, Loy Henderson Room
June 27, 2008

Introduction

Water. It covers more than 2/3 of our planet. It is a driving force that shapes our landscape. And it makes up most of the human body. Water is essential for life as we know it.

Yet less than 1 percent of the earth's water is readily accessible as drinkable fresh water. The continents are surrounded by salt water, unavailable without costly treatment.

The limitations of this precious resource will determine our future -- the size and location of our populations, the course of disease, and the decisions of nations and states to compete, or cooperate.

We have come together to promote good will and cooperation. And, with the support of organizations like UNESCO (the United Nations Educational, Scientific and Cultural Organization) to create a rallying point for addressing one of humanity's most basic needs.

I am pleased, in my dual role as a member of the U.S. National Commission for UNESCO and director of the U.S. National Science Foundation (NSF), to welcome this distinguished group to the forum.

Wearing my UNESCO hat, I would like to thank NSF and the Office of Science and Technology Policy for sponsoring this event. I especially want to thank Dr. Kathie Olsen, NSF deputy director, and the team from NSF, the U.S. Geological Survey (USGS), and the State Department who organized today's agenda as well as last night's reception. Too many contributed to name them all, but you know who you are and your contributions are very much appreciated.

You can see on your program the logos of the agencies that contributed to the reception last night and helped plan today's forum. They are:

- Agency for International Development
- Department of Agriculture
- U.S. Army Corps of Engineers
- Environmental Protection Agency
- Department of Interior, and especially U.S. Geological Survey
- National Aeronautics and Space Administration
- National Oceans and Atmospheric Administration
- National Science Foundation
- Office of Science and Technology Policy

- State Department

Today we will explore the role of science and technology in addressing the challenges of fresh water in arid and urban regions, especially the challenges facing developing countries.

We hope that this forum will provide a complementary perspective to the International Conference on Water Scarcity, Global Changes, and Groundwater Management Responses scheduled in December 2008 at the University of California, Irvine.

That conference will be convened by UNESCO, the university, and USGS. Though it will feature technical sessions and showcase practical examples, it will focus primarily on the institutional aspects of governance and communication between scientists and policymakers.

I'd like to introduce Dr. Jean Fried, of the University of California, Irvine, who is a UNESCO senior science consultant and co-chair of the International Scientific Committee for the conference. I encourage you to contact Dr. Fried and other members of the conference steering committee who are here, with any questions or suggestions for December.

Role of science and technology

Science and technology can be powerful vehicles for delivering hope to African nations struggling to supply clean, safe, and abundant water to their citizens.

Yet the tools of science and technology, alone, cannot meet this rigorous challenge. Those tools need to be accompanied by carefully crafted research strategies, national commitments, and a strong will among nations to work together.

Research strategy

The tools of science and technology have reached a degree of sophistication that could foolishly lead us to believe that our problems can be solved with ease.

We have modeled water cycles, from thundercloud to aquifer; and from the headwaters of a tiny stream to the sea, and back again. We are exploring water's physical and chemical properties, and its interactions with natural and man-made phenomena.

At the same time, we are developing a comprehensive model of the earth's water system, at multiple scales. This is one of our scientific grand challenges, and it will require both the innovative ideas of scientists and citizens, and a vast, interconnected network of sensors, satellites, and computational power.

We have barely broken the surface of what we need to know to confidently forecast long-term water availability. I am confident there are surprises in store.

The research is not limited to physical and technical issues, but also seeks insights from the social and economic sciences. These insights can help nations manage difficult societal challenges, such as scarcity, distribution, and the effects of a changing climate.

National strategy

Science and technology are most useful when accompanied by a national commitment to support research, and also to incorporate research results into national policy. These will be important topics as we move forward, and as we reconvene in Irvine in December.

The U.S. government recognizes the critical role of fresh water in human health, environmental quality, and economic prosperity. We have made it a priority to develop a national research strategy that will examine how supplies of clean, fresh water can be sustained. In fact, NSF and USGS are collaborating on a new water research initiative that recognizes the pressing need for more progress in this area. It was approved for the 2009 budget year.

With national-level support for research, governments can make decisions and develop sustainable water management strategies that are informed by scientific results. Technology can help nations and communities carry out those decisions and strategies.

International cooperation

International cooperation can help ensure that knowledge and technology, regardless of origin, are available to all nations seeking to supply clean, fresh water to their citizens. As scientists and engineers proceed with research, we must find ways to adapt new information and technology to the needs of particular continents, countries, and communities.

In the scientific community, we have found that an effective way to transfer knowledge and technology is to form partnerships among scientists, universities, industries, and governments. NSF-supported centers and facilities often form the nexus of broadly accessible research and education networks.

Forums such as this create opportunities to learn from each other and seek partners. They generate dialogue among scientists, and between scientists and policymakers.

Through the sharing of information, nations still developing their resources can benefit from the experience of others in shaping and adapting their strategies, and identifying technologies appropriate to their national environments.

Through partnerships with their international peers, U.S. researchers and educators can also assist in building research and workforce capacity in developing nations. For example, NSF's mechanisms for international partnerships can help students and young professionals travel to research and education centers for hands-on training.

Conclusion

As representatives of our respective nations, we are charged with a weighty responsibility-- assuring that water resources sufficient to promote health, security, and a high standard of living are sustainable. We are also blessed with the opportunity to seek information and partners from among other nations.

Let us begin our dialogue today with the goal of building an international community focused on using science and technology to address this global challenge. The results of today's discussions will inform our path forward, and help shape the agenda of the conference in December.

I hope you will come away from today's discussions with hope, ideas, and partners that can help ensure that the tools of science and technology will be available in abundance, along with our good will.